

## KINGDOM FUNGI (MYCOPHYTA)

- **Mycology** = the study of fungi
- fossil record dates to 900 million years ago
- at one time classified in the Plantae Kingdom
- Recent molecular evidence suggests that fungi are probably more closely related to animals than either protists or plants!!!

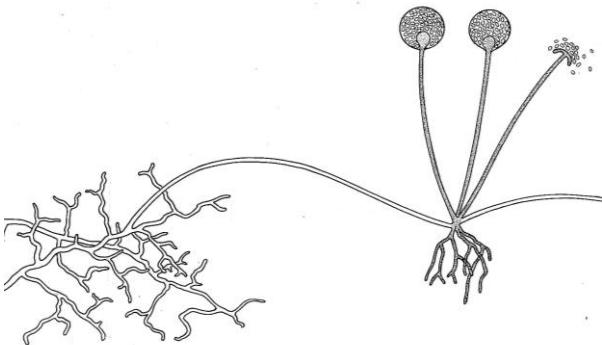


- GENERAL CHARACTERISTICS:

- 1) **eukaryotic**
- 2) most are **multicellular** and macroscopic
- 3) **sessile**, most are terrestrial
- 4) have cell walls composed of "**chitin**" (a carbohydrate)
- 5) lack chlorophyll = **Heterotrophs**
- 6) require warmth, moisture and oxygen for growth; prefer darkness

- STRUCTURE:

- made up of thread-like filaments called "**hyphae**"



- A) **rhizoids**: descending hyphae : **anchor** the fungi and **absorb** predigested nutrients
- B) **mycelium**: branching filaments which make up the **fungus body**
- C) **stolons**: filaments which grow **horizontally** on the **surface** of the substrate
- D) **ascending hyphae**: filaments that grow **upwards** ending in reproductive structures (**spore cases**)

- **NUTRITION:**

A) **Saprophytes**  
= break down **material** extracellularly with secreted enzymes  
: eg) mushrooms, molds

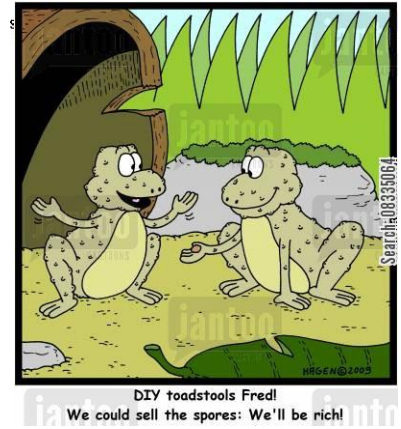
B) **Parasites**  
= pathogens, living off a **live host**  
: eg) athlete's foot, ring worm, Dwarf mistletoe



"YOU ARE RIGHT; IT DOES APPEAR TO BE SOME SORT OF FUNGUS."

- **REPRODUCTION**

- most fungi are capable of reproducing both asexually and sexually
- Asexual: 1) most fungi producing **spores** on ascending hyphae
- 2) **fragmentation** (breaking) of mycelium
- 3) **budding** (a miniature organism forms as outgrowth of parent)
- Sexual: simple **conjugation** of hyphae from 2 different strains (+,-) unite to produce a structure that will develop a spore case

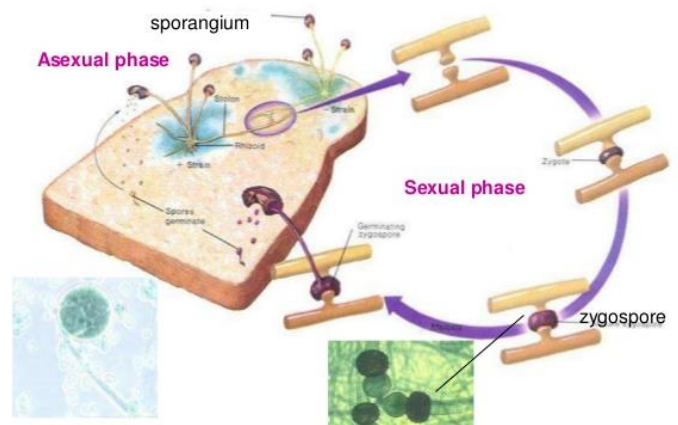


- fungi are divided into 5 phyla based on **their spore producing structures**

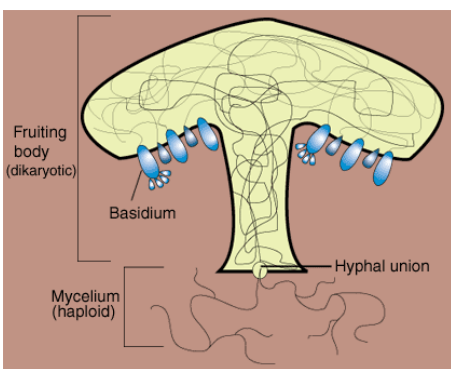
**PHYLUM ZYGOMYCETES**

- includes black bread mold
- Asexual Reproduction
  - : ascending hyphae called "**sporagiospheres**" produce **sporangiospores** in "**sporangia**"
- Sexual Reproduction
  - : a **zygospore** is produced via meeting of (+,-) hyphae
  - : the zygosporangium develops a sporangia which produces spores having **characteristics** of both fungi strains

**Life cycle of *Rhizopus stolonifer***



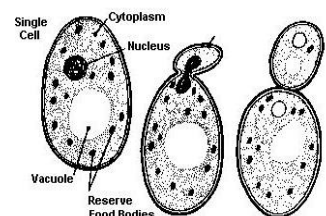
**PHYLUM BASIDIOMYCETES (Club Fungi)**



- includes mushrooms, puffballs, bracket fungi, rusts, smuts
- 4 spores called **basidiospores** are produced sexually on the surface of club-like structures called "**basidia**"
- basidia are located within the **gills** of the cap of the mushroom

**PHYLUM ASCOMYCETES (Sac Fungi)**

- includes yeast, morels, mildews, Dutch elm disease
- produce **ascospores** in sac-like structures called "**ascus**" through sexual reproduction
- yeast commonly produce spores asexually by **budding**



## PHYLUM DEUTEROMYCETES (Imperfect Fungi)

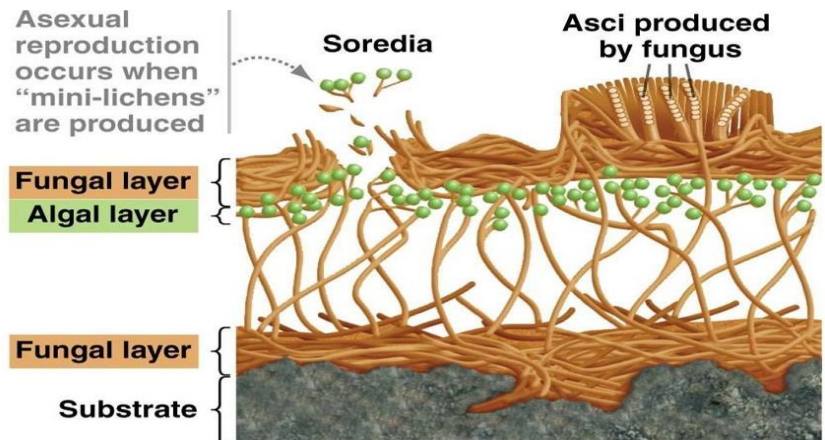
- includes penicillin, athlete's foot, etc.
- reproduce asexually; no known method of sexual reproduction = **imperfect**
  - : will be reclassified if / when method of sexual reproduction identified



## PHYLUM MYCOPHYCOPHYTA (Lichens)



- includes Reindeer moss
- are really 2 organisms in one (fungi and algae or cyanobacteria) = **Symbiosis**
  - : fungal hyphae provides the algae with **protection, H<sub>2</sub>O & CO<sub>2</sub>**
  - : algae provides the fungus with **food** produced through photosynthesis
- tend to reproduce by **fragmentation** but placed in the Fungi Kingdom because it may produce "**acospores**"



- good things about fungi:
  - 1) decomposers
  - 2) production of antibiotics (penicillin)
  - 3) food source; food production (mushrooms, bread, cheese)
  - 4) production of goods (leather, linen)
  - 5) monitor air quality (lichens)
- bad things about fungi:
  - 1) can cause diseases (athlete's foot, ring worm, rust, Dutch elm disease)
  - 2) destroy food
  - 3) some are poisonous

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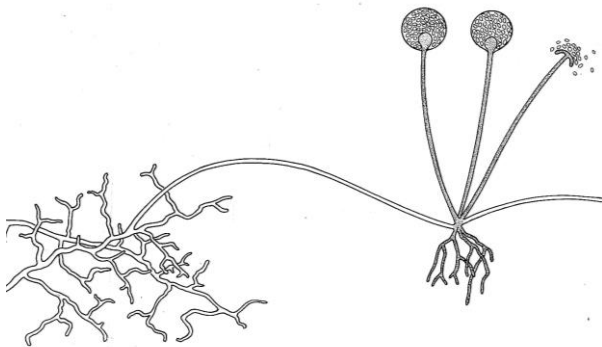
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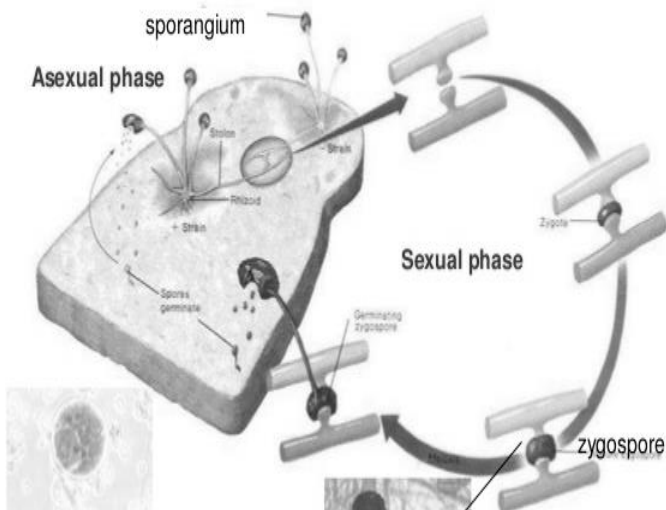
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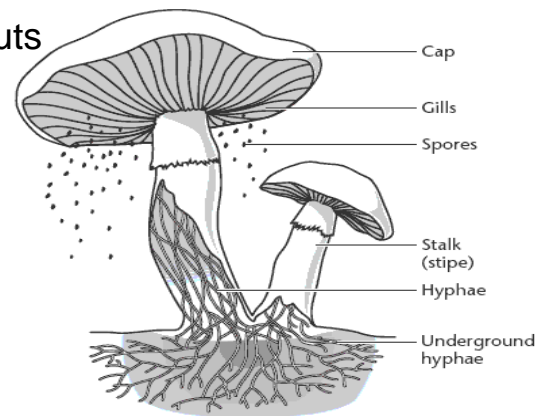


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produce \_\_\_\_\_ in \_\_\_\_\_

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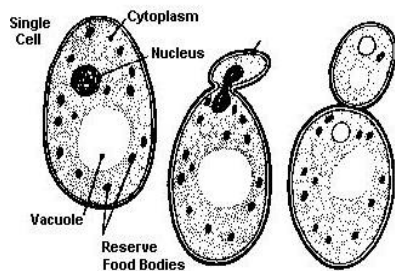
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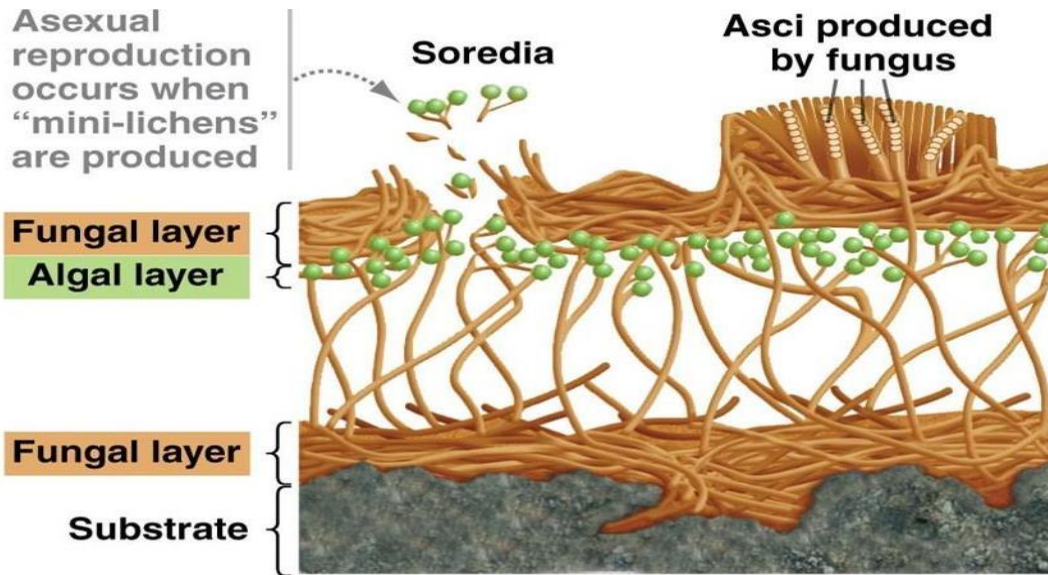
- produce \_\_\_\_\_ in sac-like structures called  
\_\_\_\_\_ through sexual reproduction  
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